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09/356,532	07/19/1999	ELLIOT KARL KOLODNER	UK98093	7951

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EXAMINER

NGUYEN, DUSTIN

ART UNIT	PAPER NUMBER
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2154

DATE MAILED: 01/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/356,532

Applicant(s)

KOLODNER ET AL.

Examiner

Dustin Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

1. Claims 1 – 26 are considered for examination.

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No.

09/337,824. Although the conflicting claims are not identical, they are not patentably distinct from each other because both methods of managing memory in a multi-threaded processing environment comprise substantially the same elements. The difference between Application No. 09/337,824 and this case is the claimed "monitoring the object to determine whether the object is referenced only from a given thread stack" and "for a given thread, monitoring each object that is local to the given thread". Although the claimed language is not the same, it would have been obvious to one of ordinary skill in the art that monitoring each object that is local to the given thread is indeed the function of monitoring the object to determine whether the object is

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referenced only from a given thread stack of Application No. 09/337,824. Therefore, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 – 26 are rejected under 35 U.S.C. 103[a] as being unpatentable over Houlsdworth [ US Patent No 6304949 ], in view of Agesen et al. [ US Patent No 6253215 ].

4. As per claim 1, Houlsdworth discloses the method of managing memory in a multi-threaded processing environment including local thread stacks and local thread heaps, and a global heap, said method comprising:

creating an object in a thread heap [ col 4, line 13-15 ].

Houlsdworth does not disclose other limitation of the claim.

Agesen discloses

for a given thread, monitoring [ identify ] each object that is local to the given thread, to determine whether the object is accessible from any thread other than the given thread [ direct or indirect ] [ col 3, line 19-24 and col 11, line 37-50 ].

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At the time the invention was made, it would have been obvious to a person skill in the art to combine Houlsdworth and Agesen because it would prevent deleting the wrong data object to keep data consistency with in a system.

5. As per claim 2, Houlsdworth does not disclose the limitation of the claim. Agesen discloses assigning a status to the given object, the status designating the object as a local object [ col 11, line 18-28 ]. At the time the invention was made, it would have been obvious to a person skill in the art to combine Houlsdworth and Agesen because it would help the garbage collection algorithm to perform faster for reclaiming the unused memory.

6. As per claim 3, Houlsdworth discloses deleting from the thread heap one or more local objects when it is determined that they are not accessible from a local root [ col 3, line 19-27 ].

7. As per claim 4, Houlsdworth does not disclose the limitation of the claim. Agesen discloses changing the status of the object to global [ raises a global flag ] when the monitoring step determines that the object is accessible from either of a global root or other global object [ inconsistent ] [ col 12, line 35-40 ]. At the time the invention was made, it would have been obvious to a person skill in the art to combine Houlsdworth and Agesen because it would prevent deleting the wrong data object to keep data consistency.

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8. As per claim 5, Houlsdworth discloses changing the status of an object in the thread heap to global if the object is assigned to a static variable or if the object is assigned to a field in a global object [ set global flag ] [ col 5, line 52-56 ].

9. As per claim 6, Houlsdworth discloses intercepting assignment operations to an object in the thread heap to determine whether the object status should be changed [ col 6, line 12-27 ].

10. As per claim 7, Houlsdworth teaches the multithreaded processing environment is a virtual machine [ col 4, line 15-19 ].

11. As per claim 8, Houlsdworth teaches the virtual machine comprises an interpreter comprising a write operation code modified to perform a checking of assignment of the object [ col 7, line 21-30 ].

12. As per claim 9, Houlsdworth does not disclose the limitation of the claim. Agesen discloses the virtual machine comprises a just in time compiler wherein native compiled write operation code includes native code to perform the checking of assignment of the object [ col 10, line 48-62 ]. At the time the invention was made, it would have been obvious to a person skill in the art to combine Houlsdworth and Agesen because it would allow the system to verify the integrity of data.

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13. As per claim 10, Agesen discloses the spare capacity in an object header for the status [ global flag set ] [ col 2, line 19-22 ].

14. As per claim 11, Houlsdworth discloses using multiples of 2 or more bytes in a thread heap to store the objects [ memory area ] [ col 1, line 42-45 ]. Houlsdworth does not disclose other limitation of the claim. Agesen discloses whereby there is at least one spare bit in the object length variable and using the at least one spare bit as the status [ inconsistency bit ] [ col 10, line 58-62 ]. At the time the invention was made, it would have been obvious to a person skill in the art to combine Houlsdworth and Agesen because it would prevent deleting the wrong data object to keep data consistency.

15. As per claim 12, Houlsdworth discloses moving objects whose status is global from the thread heap to the global heap [ col 1, line 41-53 and col 6, line 12-27 ].

16. As per claim 13, Houlsdworth discloses compacting the reachable local objects in a thread heap [ col 2, line 49-65 ].

17. As per claim 14, it is rejected for similar reason as stated in claim 2.

18. As per claim 15, Houlsdworth discloses certain objects include class objects [ col 4, line 40-46 ].

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19. As per claim 16, Houlsdworth discloses the step of analyzing whether an object is likely to be made global and associating such an object with a global status on creation [ col 2, line 19-24 and col 6, line 22-28 ].

20. As per claim 17, Houlsdworth discloses the allocating objects assigned as global on creation to the global heap [ col 4, line 49-54 ].

21. As per claim 18, it is rejected for similar reasons as stated in claim 1. Furthermore, Agesen discloses a local thread stacks and heaps, and a global heap [ col 6, line 27-32 ]. At the time the invention was made, it would have been obvious to a person skill in the art to combine Houlsdworth and Agesen because it would provide the flexibility for object to be available to multiple methods.

22. As per claim 19, it is rejected for similar reasons as stated in claims 4 and 5.

23. As per claim 20, it is rejected for similar reason as stated above in claim 3.

24. As per claim 21, it is rejected for similar reason as stated above in claim 5.

25. As per claims 22-26, they are rejected for similar reasons as stated above in claims 1-5. Furthermore, Houlsdworth mentions the method above can be performed in a computer program [ Abstract ].



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26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dustin Nguyen whose telephone number is (703) 305-5321. The examiner can normally be reached on Monday – Friday (8:00 – 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (703) 305-9678.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directly to the receptionist whose telephone number is (703) 305-3900.

Dustin Nguyen



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